

# Solutions: Random Variables Checkpoint 1

The first three questions refer to the following information:

The random variable X, representing the number of accidents in a certain intersection in a week, has the following probability distribution:

x	0	1	2	3	4	5
P(X=x)	0.20	0.30	0.20	0.15	0.10	0.05

## Question 1

What is the probability that in a given week there will be at most 3 accidents?

Select one answer.  
10 points

- ☐ (a) 0.70
- ☐ (b) 0.85
- ☐ (c) 0.35
- ☐ (d) 0.15
- ☐ (e) 1.00

Correct answer: (b)

## Question 2

By the third day of a particular week, 2 accidents have already occurred in the intersection. What is the probability that there will be less than a total of 4 accidents during that week?

Select one answer.  
10 points

- ☐ (a) 1.00
- ☐ (b) 0.90
- ☐ (c) 0.85
- ☐ (d) 0.70
- ☐ (e) 0.50

Correct answer: (d)

## Question 3

On average, how many accidents are there in the intersection in a week?

Select one answer.  
10 points

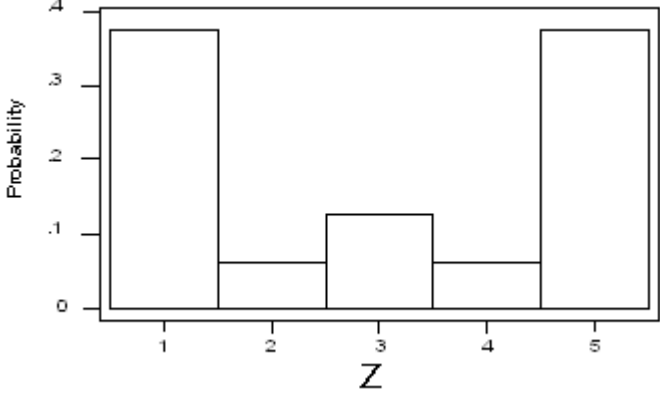
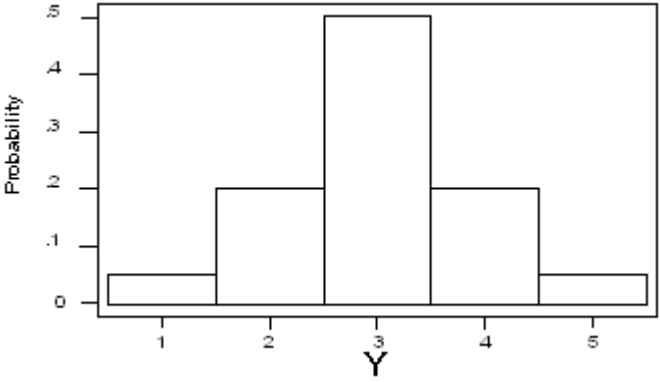
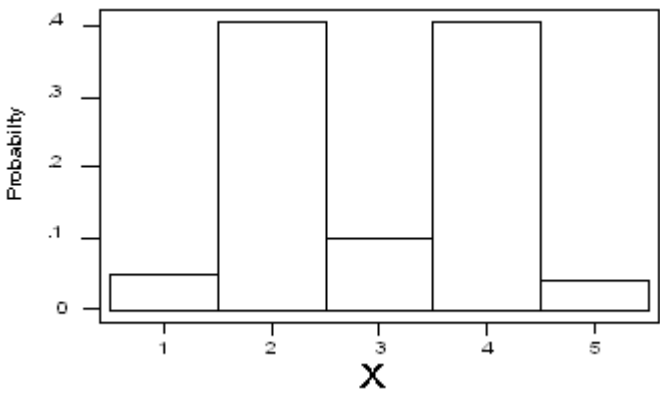
- ☐ (a) 5.3
- ☐ (b) 2.5
- ☐ (c) 1.8
- ☐ (d) 0.30
- ☐ (e) 0.1667

Correct answer: (c)

## Question 4

The following three histograms represent the probability distributions of the three random variables X, Y, and Z.

Select one answer.  
10 points



Which of the three random variables has the largest standard deviation?

- ☐ (a) X
- ☐ (b) Y
- ☐ (c) Z
- ☐ (d) All three random variables have the same standard deviation.
- ☐ (e) It is impossible to tell from the histograms.

Correct answer: (c)